

WHAT IS CLAIMED IS:

1 1. An isolated nucleic acid and the degenerate
2. sequences thereof, which encodes human $\alpha 1$ chain collagen
3. protein, comprising the nucleotide sequence set forth in SEQ
4. ID NO. 5.

1 2. The nucleic acid as claimed in claim 1, wherein the
2. human $\alpha 1$ chain collagen protein encoded by the nucleic acid
3. has the amino acid sequence set forth in SEQ ID NO. 1.

1 3. The nucleic acid as claimed in claim 2, wherein the
2. human $\alpha 1$ chain collagen protein comprises:
3. (i) von Willebrand factor A domain set forth in SEQ ID
4. NO. 2;

5. (ii) thrombospondin N-terminal-like domain set forth in
6. SEQ ID NO. 3; and

7. (iii) collagenous domain set forth in SEQ ID NO. 4.

8 4. The nucleic acid as claimed in claim 1, comprising
9. DNA and RNA.

1 5. The nucleic acid as claimed in claim 4, wherein the
2. DNA comprises cDNA and genomic DNA.

1 6. A human $\alpha 1$ chain collagen protein having the amino
2. acid sequence set forth in SEQ ID NO. 1.

1 7. The human $\alpha 1$ chain collagen protein as claimed in
2. claim 6, wherein the protein is encoded by the nucleic acid
3. of claim 1.

1 8. The human $\alpha 1$ chain collagen protein as claimed in
2 claim 7, comprising:

3 (i) von Willebrand factor A domain set forth in SEQ ID
4 NO. 2;

5 (ii) thrombospondin N-terminal-like domain set forth in
6 SEQ ID NO. 3; and

7 (iii) collagenous domain set forth in SEQ ID NO. 4.

1 9. A recombinant vector comprising the nucleic acid of
2 claim 1 and a regulatory sequence.

3 10. The recombinant vector as claimed in claim 9,
4 wherein the regulatory sequence comprises an operatively
5 linked promoter.

6 11. The recombinant vector as claimed in claim 9,
7 wherein the recombinant vector is designated Bluescript
8 KS(+)/*E. coli* DH5 α (*hCOLA1*) and deposited at the Culture
9 Collection and Research Center (Hsinchu, Taiwan) and
10 assigned accession number CCRC 940331.

1 12. A method for producing human $\alpha 1$ chain collagen
2 protein, comprising the steps of:

3 (a) transforming or transfecting a host cell with the
4 recombinant vector of claim 9;

5 (b) culturing said transformed or transfected cell
6 under the conditions sufficient for expression of the human
7 $\alpha 1$ chain collagen protein; and

8 (c) recovering and purifying the human $\alpha 1$ chain
9 collagen protein.

1 13. The method as claimed in claim 12, wherein the host
2 cell is selected from the group consisting of prokaryotic
3 and eukaryotic cell.

1 14. The method as claimed in claim 13, wherein the
2 prokaryotic cell comprises *Escherichia coli*.

1 15. The method as claimed in claim 13, wherein the
2 eukaryotic cell comprises mammalian cell.

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